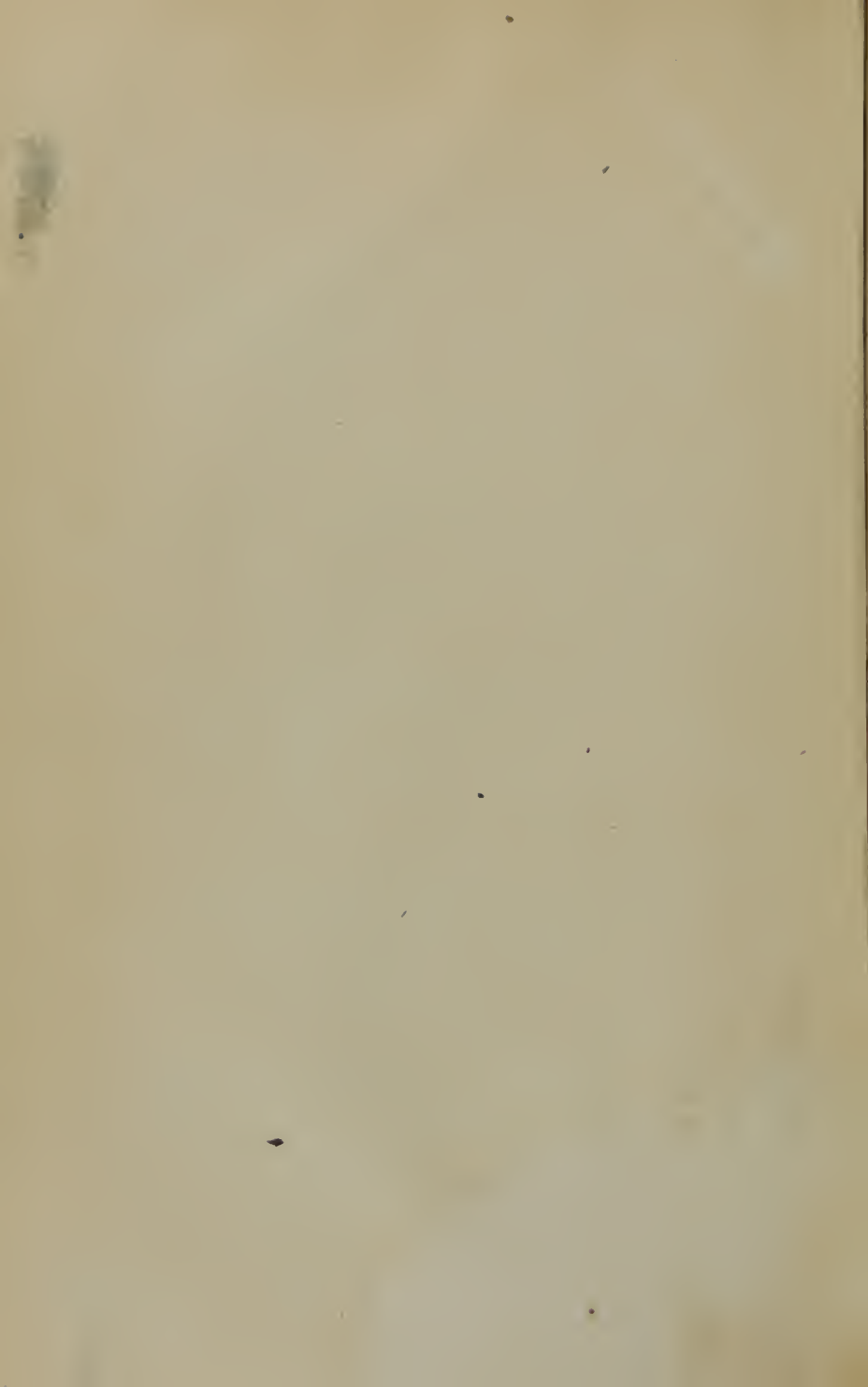


W Z  
100  
L8139W  
1857

right

Lift and Character  
Professor John Locke



AN ADDRESS  
ON THE  
LIFE AND CHARACTER  
OF THE LATE  
PROFESSOR JOHN LOCKE,  
DELIVERED AT THE REQUEST  
OF THE  
Cincinnati Medical Society.

18129  
By M. B. WRIGHT, M. D.

18129  
CINCINNATI:  
MOORE, WILSTACH, KEYS & CO., PRINTERS,  
25 WEST FOURTH STREET.

WZ  
100  
LB128W  
1957

Film No. 2043, # 1

# A D D R E S S .

---

MEMBERS OF THE CINCINNATI MEDICAL SOCIETY :

FROM motives of kindness I have been intrusted with a mournful, and yet, in view of the object, an agreeable duty. When I remember, that for twelve long years, Dr. JOHN LOCKE and myself were associated as teachers in the same Medical Institution, and that during this entire period not an unkind word had ever fallen from the lips of either—when I review his repeated manifestations of friendship and confidence, I become doubly anxious to render as full justice to his memory, as the materials before me, and the extent of my ability will allow.

The great luminary disappearing beneath the horizon, sends back his rays upon the celestial arch, that they may be reflected in brightness and beauty upon us ; but they are gone too soon for the easel and canvas of the painter. Another light, in going down behind the curtain of time, has left indelible rays upon the firmament of science, yet they are so scattered, it seems equally difficult to transfer them to paper. It shall be our effort, however, to concentrate them, here and there, that you may trace, more plainly, the pathway that leads to the grave of fallen greatness, and

keep the sod upon it fresh and green, by the dews of memory and affection.

Samuel Barron Locke, the father of the subject of our sketch, had acquired reputation as a mill-wright, far in advance of most of his contemporaries. In consequence of this, his services were in great demand, and his engagements required him to reside successively in Vermont, New Hampshire, and Maine. In 1796 he removed permanently to Bethel, in the latter State, where he erected some mills, still known as "Locke's Mills."

John Locke was born February 19, 1792, and was, therefore, about four years old when his father removed to Bethel. His mechanical taste and ingenuity were manifested at an early age, and some interesting anecdotes have been related and published, illustrative of his skill in handicraft. It is probable, that in boyhood, he learned the use of tools, and the construction of machinery, under the direction of his father. And it is easy to imagine, that during this period, while calculating the velocity and motive power of water, and the resistance to be overcome—the velocity of the float-boards of the wheel—the number of turns of the wheel in a given time—the size and turns of the mill-stone proportioned to the wheel—the number of staves in the trundle, and the number of cogs in the wheel, his young mind became fascinated with investigations in philosophy, and calculations in mathematics.

Bethel was not noted for the costly castle of a gouty Baron; nor for her Abbey, containing in its gloomy



apartments the tombs and ashes of Kings; nor for her Elysian fields, in which the multitude could congregate to witness and admire the newest fashions; but, better than all these, she had a living oracle, bespeaking pleasure, prosperity, and happiness to those who might partake of its counsels—a *Circulating Library*.

Among the works of the Library was the Minor Encyclopedia, by Rev. Thaddeus M. Harris, of Mass. This book, although brief, contained some sketches and definitions of Sciences not common in those times. Those relating to Botany, especially, arrested young Locke's attention. He could not understand the terms used, for the book did not contain any explanation of them; but he made a successful appeal to nature to supply the deficiency. For instance, he found the term *filament*, and from its common meaning he suspected the part of the flower to which it applied. Again, he found that the filaments were surmounted by anthers. Here was illustrated another term. Thus, by guessing at the meaning, and observing every point of consistency, he found substantial illustrations of much of the language of Botany. In the years 1808 or '10 his studies in Botany were thus prosecuted; soon after which he entered an academy in Bridgeport to study languages; but even there he could not withdraw his attention from those pursuits for which he had so strong a propensity. Through the kindness of a most excellent preceptor—B. Cushman, A. M., a class-mate of Nathaniel Wright, Esq., of Cincinnati—he obtained Adam's Philosophy,

distinguished for the perfection of the illustrations of apparatus, and the descriptions of its use, for the author was an instrument maker, at Holborn-hill. These volumes were read by him with eagerness and attention, and their facts were preserved as so many rare treasures. The representations of instruments were so perfect, that he used them at once, with great facility, in his manipulations.

About the year 1816, after returning from the academy to Bethel, young Locke commenced the study of medicine. At this time he obtained access to Gregory's Dictionary, then just published, by the aid of which he acquired knowledge with rapidity. Mrs. B——'s Chemistry, a book highly attractive to those engaged in the elements of chemical science, arrested his attention. He had never seen a chemist, nor a piece of chemical apparatus, but his inventive genius led him to the construction of his own instruments, and the performance of a series of experiments, in all of which he was successful.

It may be stated, however, that a few years previous to this time the experiments of Galvani, and of Volta became known, and the results were so wonderful that the young philosopher could not rest satisfied until he had tested the experiments, and verified the results. For this purpose he chiseled out a mould in a soft brick-bat, and cast a set of dishes of zinc, about the size of a silver dollar. Twenty of these, with as many silver dollars, were constructed into a "pile;" the dollars being used for the negative element, and cloths



wet in brine for the imperfect conductor. No shock could be perceived by touching the poles of this instrument with the wet hands, but by thrusting pins under the skin, a decided and powerful effect was experienced. Thus began his acquaintance with that wonderful agent, which was afterward to occupy so much of his attention. Some of those zinc plates, cast in the brick-bat, are now in existence.

Bethel, it will be perceived, was not calculated by its attractions to retain the ardent searcher after knowledge. He must needs acquire a profession, and was induced to visit Dr. Nathan Smith, justly celebrated in his time, from whom he received great encouragement in the prosecution of his studies. Subsequently he became the pupil of Dr. Twitchell, of Keene, New Hampshire, accomplished and successful as a surgeon. Anatomical preparations in abundance and a good library captivated the mind of the now medical student. Still he could not relinquish the pursuit of general physics, and was frequently engaged making barometers and other instruments, and such experiments as were suggested.

A copy of "Silliman's Travels in Europe" fell into the hands of the restless student, and by him the fascinations of the book were transferred to the author. He resolved to overcome all obstacles and proceed at once to New Haven. Here, for the first time in his life, he found satisfactory means for acquiring knowledge. He could call to his assistance books, teachers, apparatus, experiments, and was surrounded by men

qualified and ready to answer any of the numerous inquiries which were continually rising in his mind. Great, indeed, was the contrast between this and the lonely, destitute condition of his earlier efforts. Still, it may be a question whether his scanty means did not lay the foundation for future success. Originality and self-reliance became a necessity, and at a period in life unusually early, he was led to attempt and accomplish much more than the mere absorption of other men's ideas.

It is not surprising that the student of botany, at the present day, should admire the beauty of the flower and the delicacy of its structure, but that he should also become anxious to learn the classifications and every word in the vocabulary of Botanical Science; for, now, books, teachers and means for illustration are abundant. At the time of which we speak it was far different with young Locke, and no one except an enthusiast could have pursued his way in defiance of all obstacles as he did. Such books as were within his reach limited his information to something like the following: "*Pentandria*—The name of the fifth class of plants in the Linnæan system of Botany." It was, doubtless, gratifying to find some plants having this character, but it was not enough. In this way, however, a hint had been obtained that Linnæus had written a book. An effort was made to obtain it, but it was not to be found even in Boston. Miss Wakefield's little book on Botany was speedily and profitably read. As yet our student had not seen any one possessed of botani-

cal knowledge. And, doubtless, many amusing comments were made by those who saw him engaged in gathering and dissecting clover heads and dandelion flowers.

From this time the clouds that had obscured his botanical prospects began to disperse. Passing through Hanover he learned that Dr. Solon Smith was studying botany. Now he felt that he was near a congenial spirit, ready to extend to him aid and encouragement, and without delay he sought an interview. Young Smith had also received so many jeers and gibes that he had become misanthropic, and distrusted the sincerity of the seeming intruder. A few interchanges of sentiment, however, secured mutual confidence and co-operation. They were soon on their way to the fields, vying with each other in their homage to Flora, and in constructing bright garlands for the enchanting goddess. They did not appear before her as jealous rivals, but with the feelings of worshipers at the same holy shrine. "Bigelow's Plants of Boston" had been published, and was in the hands of Smith. No treasure could be seized with more avidity than was this book. Its teachings were immediately applied to practice. A plant was in flower, and the diagnostic description of it leading to the discovery of the name, great satisfaction was felt and joy manifested.

These twin enthusiasts were together not only in the green fields and woodlands and blooming gardens of summer, but in cold mid-winter they climbed to the

top of "East Rock" to study buds and frozen evergreens.

They separated after a close intimacy of two years, each to pursue his own line of duty. The subject of our sketch returned to Keene, New Hampshire, not as a medical student but as a teacher of Botany. A correspondence had been opened between himself and Professor Bigelow, of Boston, and through the influence of the Professor he became procurator of plants for the Botanical Garden of Cambridge. In this situation, under the patronage of the Massachusetts Agricultural Society, and with Professor Bigelow as his teacher and his counselor, his many golden dreams were realized, and, in his own language, he "reveled in the Hesperides of Botanical felicity."

During this year, 1818, he delivered his first public lectures in Portland, Maine. In Dartmouth College, in Boston and Salem, and in several academics and schools he lectured upon his favorite topics. A spirit of inquiry and examination spread from the teacher to the auditor and pupil, and woods and fields were trodden by nimble feet and filled with the sounds of happy voices.

Presidents and Professors are often censured for bestowing favors upon some one in a class without considering, in any degree, the circumstances surrounding the parties; without advocating it as a principle we think the justice of it at least, in one case, may be made apparent by the relation of the following incident:

On a certain occasion Dr. Kirkland, the President of the University at Cambridge, sent word to the Curator that he wished to see him. The summons was obeyed, yet with that internal feeling of dread which a country boy, a modest curator, might be supposed to have approaching one occupying so dignified and distinguished a position. The meeting, however, was not one of embarrassment. The ease of manner and graceless attitude of the President forced upon the visitor the sensible reflection "a man's a man for a' that." The student need not be told what this attitude was, for the President has already been pictured, in his imagination, leaning back in his chair with his feet high on the mantel piece. His salutation was jocose and without formality, and ran into the following conversation:

"Locke, I understand you are endeavoring to learn something."

"Yes, sir, it is my desire to learn all that I can."

"But, Locke, you do not seem inclined to go through College."

"I am unable, sir."

"Indeed! Out of several hundred students how many know any thing of that they profess to have studied?"

"I can not answer that question."

"Well, I suppose about one out of ten. The nine prefer the diploma without the knowledge, while you, Locke, are satisfied with nothing but the knowledge."

This interview ended with as high a compliment as



was ever extended to an humble curator by the President of a University.

"Come to me, Locke," was the earnest request; "at stated hours bring with you fresh specimens of flowers, and instruct me in the science of Botany."

Notwithstanding these individual tokens of regard and encouragement, the devoted student found himself in unequal competition with those young men who accommodated themselves to the fashions and religious doctrines of the day. He had a decided repugnance to the dominant religious sect, on account of the efforts which they openly made to become the controlling party in the halls of legislation. They had obtained a majority in the Legislature of Massachusetts, and passed an act compelling all persons to pay a tax for the support of the settled clergyman of the parish, unless they produced certificates of payment for the support of a minister of some other denomination. Large numbers refused to procure the certificate, and suffered themselves to be drawn in carts to the jails by the parish collector. The young Botanist saw the cattle of his own father, who was attached to the Methodist Church, driven away by force, and they were sold for the maintenance of a clergyman he had never heard and had no desire to hear. Those who knew Dr. Locke in the maturity of his intellect, can easily imagine what he would say and do in resistance of such tyranny, when the fire and energy and determination of his young manhood were being fully developed.

The Botany of New England had all been learned,

and like one bent on the accumulation of wealth he wanted more, more! His mind turned to the Pacific, as thousands of others have done since from different motives, that he might acquire a knowledge of Botany as it existed along her coast. He obtained an appointment in the navy as Assistant Surgeon, and sailed in the Macedonian frigate, with bright and buoyant hopes. A West India tornado dismantled the ship, and she put back into Norfolk to repair. While there orders were given to open her at Valparaiso, and thus her final destination was rendered uncertain. Disappointed thus far in the accomplishment of his object, and with nothing to inspire confidence in the future, the Assistant Surgeon asked and obtained leave to withdraw from the service. He returned to New Haven, entered upon a second course of medical lectures, passed an examination and received the degree of Doctor of Medicine.

Previous to entering the Navy, he had commenced a treatise on the elements of Botany, and after his return, in 1819, completed the work. It professed to be chiefly an abridgement of Smith's Botany, but in truth it contained more originality than many of those works issued as entirely new. While it was in progress he employed an engraver in Boston to execute one of the plates. The execution was bad, and the charge high. The author was dissatisfied, and, having purchased some tools and sheet copper, made his own engravings afterward. These representations were so

close to the original that Mr. Nuttall used them in a work subsequently published by himself.

Scarcely four years had elapsed, since he left the valley of the Androscoggin a plain country boy, and yet, within that time, he had secured the favor of distinguished men, had received the appointment of Assistant Surgeon in the Navy, had become a Doctor of Medicine, an author of a popular scientific work, a teacher and lecturer in colleges, not only to pupils, but to professors. All this was accomplished without one dollar of patronage or support, except that created by his own exertions. His father, although not destitute of means, nor of intelligence, could not fathom his designs, nor appreciate the tendency of his labors sufficiently to induce any pecuniary outlay. Perhaps, if the son had pursued the slow, even tenor of his way, had trudged along the old beaten path, and had been satisfied with teaching and correcting the young urchin, in the country School-House, the parent would have been mindful of his necessities. And it may be, the parent reasoned, "If the boy can summon courage enough to appear before learned men, and, by his unaided efforts, has acquired knowledge enough to impart to them instruction, he needs no assistance from me; his own *will* seems destined to achieve that which money can not purchase."

Men of science are national men; that is, they are ever mindful of the good of the people, and endeavor to promote it, so far as it may fall within the line of

their respective pursuits. This principle was engrafted upon the mind of the botanist whose career we are endeavoring to sketch, at a very early period in life. He gazed admiringly upon the tiny flower, but he examined, with a view to their utility, plants and trees of large growth. Nearly forty years ago he called the attention of the public to several matters of interest, and among them to the value of the river maple, compared with sugar maple in the production of sugar, and as a shade tree. I can not refrain from quoting a few sentences from his communication. "I never contemplated," he says, "a picture or landscape with more delight than I have the banks of some of these streams (the Androscoggin, Saco, etc.), when viewed from the opposite shore. The tops of the trees present one continued range of foliage, which rises like a fleecy cloud, changing beautifully in the wind, as the upper green, or under white surface is presented to view. This cloud of leaves is supported by the clusters of trunks, like so many Gothic pillars, forming a variety of deep-shaded arches, and avenues beneath. I mention its beauty, because I think it deserves attention as an ornamental tree."

Dr. Rush had expressed the opinion, that a sufficient quantity of sugar might be obtained from the maple to exclude, in a good degree, the West India article. This he advocated, not only as a system of national protection, but with the remote prospect of lessening the value of slave labor, and thus to ameliorate the oppressed condition of the slave himself. Although

not embracing these sentiments to their full extent, the Botanist suggested, that by the preservation and culture of the maple, the country could have means at home on which they could rely in time of war.

Since that time the great West has been opened to full view. Where now is that beautiful tree, which rose so majestically along our rivers, and in the solitude and silence of our forests? Beneath its branches the sugar-making groups of the early settlers were busy and happy. It enabled them to sweeten the cup of refreshment after the day of toil, and to secure a degree of independence in the far off cabin. Where is it now? It has fallen under the stroke of the woodman's ax, and commerce has destroyed almost every trace of the landscape, of which it made so conspicuous a part.

Later in life, indeed, after he had become prominent as an original investigator in the field of general science, Dr. Locke felt great delight in the investigation of botanical subjects, and in rendering the labors of the study easy. He invented a Botanical Press, which in part is thus described in Silliman's Journal: "Although this press is so portable as to be packed in a common traveling trunk, it will exert a force, by the application of one hand, of half a ton. When neatly made of mahogany, and polished, it is not unsightly in the parlor; and the pressure being applied to the pile of papers containing the specimens, the click holding the last force, the lever may be removed, and it may be set on one end, at the side of the room, scarcely



incommoding any other operations. It is peculiarly adapted to the purposes of the traveling Botanist. It is capable of being applied to other uses than those of pressing plants for an herbarium. On a large scale it would be an excellent cheese press, and it has been already adopted for some parts of book-binders' operations. Printers will find it convenient to apply to their paper in wetting it down."

After having graduated, Dr. Locke attempted to establish himself as a Physician. He found patients, but they could give thanks more easily than money. They were acceptable as a means of increasing his knowledge of disease, and skill in its treatment; but current expenses had to be met, and how was this to be done, if he received no remuneration for his services? It is not surprising that in after life, his sympathies were so strongly drawn out in behalf of the indigent student, and unrequited practitioner.

All those bright prospects that had been seen in the distance, during his medical studies, and that seemed to be more and more within his grasp, in proportion as the time for his receiving the Doctorate grew near, were speedily dissipated under the weight of pecuniary engagements. His debts were, comparatively, a trifle; yet to a man of his sensibility and strict honesty, all debts are large which he has not the means to pay. Under feelings of discouragement and despondency the practice of medicine was abandoned, and a place accepted in a female academy, in Windsor, Vermont, as assistant teacher. This academy was under the

superintendence of Col. Dunham, who subsequently removed to Lexington, Ky. The assistant had agreed to accompany him. The time for their departure had arrived, but the principal being detained, it became necessary for the assistant to proceed alone and organize the school in contemplation. In June, 1821, he reached Lexington, and entered speedily upon the task before him. Much to his surprise, the classes were to be composed, not of romping school girls, but of young ladies of beauty and fascination, whom he had already seen in the midst of those brilliant social parties for which Lexington has been so distinguished. And no man could have felt more keenly the delicacy and responsibility of his new position.

Dr. Locke had, in good time, discovered, that he too had an important study before him. He had not emigrated to the West with any fixed ideas of intellectual superiority, nor with any pre-determined models to which he expected his pupils to conform. Western character was here before him, and he examined it like a sensible, unprejudiced man, encouraging it in the full development of its excellencies, and modifying other points, as circumstances might indicate. He gave instruction, heard recitation, and endeavored, by every possible means, to facilitate the study of the pupil, and give stability to her laudable purpose. By and by, it was deemed necessary to attempt a change in the habits of some of the pupils, by an appeal to their judgments and pride of character. The form of the appeal was as follows:

“YOUNG LADIES:—I perceive there are two parties in this Academy, and I shall not offer any objections to it; for it seems in this country there are two parties in every thing. I shall not interfere with your arrangements in this respect, further than to give a description of your two parties, and my opinion of the course or destination of each.

“One party draw their seats near each other, and seem to enjoy themselves very much in conversation. They are evidently very happy in each other’s society. Enjoyment and happiness are the legitimate pursuits in life; so I can say nothing against the occupation of that party, so far as immediate enjoyment is concerned. The other party separate themselves, solitarily, and are mostly engaged silently in study. Although cheerful, they are not flushed with excitement, and, unless we take into account other remote results, they would seem, comparatively, to be engaged in a kind of self-sacrificing occupation. They are certainly the losers, unless we can find some result which, hereafter, will be to their advantage.

“Let us look now, to what will occur by and by. Your parents have sent you here, with the desire that you will improve yourselves in the attainment of useful knowledge, and that you will acquire reputation and honor by so doing. There will be an examination at which your parents, and the public, will be present. The sociable party will then appear to disadvantage; parents will be disappointed, teachers mortified, and individual members deeply chagrined. All this may

be more than the equal of the merry sociability which has consumed so much precious time.

"The studious party will acquit themselves with distinction, and receive the admiration of all. This will be their reward for former sacrifices. It is for you to decide, whether such a reward is worth seeking. Now, I will not urge you to join either of these parties, but I desire to 'divide the house,' that we may understand to which of these parties you rightfully belong."

What followed Dr. Locke must describe.

"During this short appeal there were flashes of light from beautiful eyes, that told eloquently the strong emotions of ingenuous hearts. And when I asked, 'Who will join the studious party?' a tall, elegant girl, a member of the Breckenridge family, leaped literally into the air, and exclaimed, 'I will!' Another, and another followed, while I looked on the scene with admiration and astonishment. Not a soul but kept her pledge, and the results of order and study were most delightful. The circumstance was told to the parents, and for many years, after I had removed to Ohio, I had the affections, the confidence, and the patronage of that frank and generous people. Ever after I abandoned coercion in the government of youth, and appealed to better motives than those of fear, and all with the most gratifying success."

In 1822 Dr. Locke left Lexington and came to Cincinnati. As he emerged from the woods of Kentucky, on horseback, and rose over the hill south of

Newport, the valley surrounding the now Queen City opened to his admiring view. On approaching the city the rattling of drays, the clink of hammers, the smoke of factories, the rush of steamboats, the firing of signals of arrivals and departures, acted upon his mind with all the force of enchantment, and he determined to make it his abode during life. He had met with a cordial and open-hearted reception in Lexington, and he had supposed that his introduction into the society of Cincinnatians would be no less easy and agreeable. In this, however, he was mistaken. His letters of introduction received little or no attention, and just as he was becoming disheartened, and on the point of abandoning his projects, Ethan Stone became interested in his views and welfare, and requested his nephew, now Judge D. Stone, to interest himself in making the stranger known to the people. Through his kindness Dr. Locke became acquainted with the late Rev. Dr. Wilson, a man whom many of you know to have been a model of his kind, strong in intellect, decided in character, and deservedly influential throughout community. From him Dr. Locke received encouragement and the promise of his daughter as a pupil. The Rev. Dr. Ruter also became his friend, and thus he was enabled to lay the foundation of an institution the success of which equalled his most sanguine hopes.

In the establishment of his school Dr. Locke did not conceal his views in respect to moral and religious instruction. The business of teaching he considered secular, to be sustained without a shadow of sectarianism.



Yet he deemed it important, on all suitable occasions, to impress upon the minds of his pupils the great principles of religion—the existence and attributes of Deity—the expediency and necessity of cultivating social virtues. “Open your school, then, that it may be patronized by all denominations,” said Dr. Ruter, “and great good will be the result.”

“Dr. Locke’s School” very soon acquired high reputation. With him teaching was less an occupation than a pleasure. He was always accessible, always ready with an explanation. His instructions were given with conversational ease and perspicuity that seldom failed to remove timidity and to reach the dullest comprehension. He was singularly gifted in illustrations, and with the faculty of selecting those which captivated the feelings while they convinced the understanding. When least expected a question outside of their studies would be put to the scholars and an immediate answer requested. This plan was adopted with a view to cultivate quickness of thought. On one occasion he addressed the scholars in a seemingly hurried and impatient manner, with this interrogation: “Young ladies, on what day of the month does the Fourth of July come?” Not one of the entire school answered the question. All had gone beyond the near and simple fact, and were exercising their minds upon some imaginary abstruse problem.

For some months preceding his fatal illness Dr. Locke gave instruction to some classes in the Wesleyan Female Institute. To him this was a happy

period, and in singular contrast with the exciting and distracting scenes that had been constantly passing before him during three or four previous years. His connection with this college not only afforded means of partial support but occupation to a mind that could not be idle. He was forcibly reminded of the youth, and beauty, grace and gentleness, quickness of perception, and refinement of thought, the vivacity of girlhood and the dignity of maturer age, that existed at that time when so many of the intelligent mothers of Cincinnati were his own pupils.

Dr. Locke was among the earliest instructors and lecturers in the Mechanics' Institute. At an early period it had no commodious and attractive building to designate its location and reflect its character, for then the plastic hand of a Greenwood, with its energies and munificence, had not been laid upon it. In his own private apartments Dr. Locke gave his first instruction to classes of young mechanics belonging to the Institute; next in a building on Walnut street occupied by a congregation of Baptists; and, at a more recent period, in the building known as the Bazaar. Some of those who constituted the classes of the Institute were inspired by the enthusiasm of their teacher, and are now among the most intelligent and skillful of our artizans. All might have been benefited if that mistaken school-boy idea had not been cherished that labor and study contribute more to the gratification of the teacher than the good of the scholar. Like a true philosopher Dr. Locke was not satisfied with

explaining the reason of things, but with his own hands assisted in the construction of tools and machinery. The clockmaker may construct with most exquisite skill wheels and pendulum, without knowing any thing of the principles governing their movements. When Dr. Locke found such an one he derived great pleasure in imparting to him instruction, and very recently several have expressed their gratitude to him for having given them a more thorough understanding of their own daily occupation.

In 1835 Dr. Locke was elected Professor of Chemistry in the Medical College of Ohio. He had been liberally patronised, he had been successful as a teacher, his associations were adapted to his sensitive nature, and all around were daughters, wives, and mothers, sustaining by their intelligence, and accomplishments, his self-made reputation. Under these circumstances he must have accepted his new appointment with great reluctance. He was, however, deeply engaged in the investigation of scientific subjects, requiring both labor and leisure, and a place in the college seemed to open the way for a more speedy and sure accomplishment of the great ends in view.

The newly elected Professor entered upon his duties with the zeal of one having no thought of failure. He found the chemical department of the college almost destitute of the necessary means of illustration. Many obstacles were overcome, and deficiencies supplied by his own ingenuity and handicraft. Still his liberal views, and the increasing intelligence of the profession

required something more. To meet every possible demand, he visited Europe, and purchased apparatus at an expense of several thousand dollars. On his return he was introduced to an almost entire new set of colleagues, most of them untried men—Drs. Cobb, Cross, Eberle, and Smith having resigned their professorships. In addition to these discouragements the very able Faculty of the Cincinnati College, then in existence, were contending manfully, not to say fiercely, for supremacy. But his will and his efforts were unfaltering, although large pecuniary guarantees were offered as an inducement to join a Medical School in a neighboring State. The college gradually gained in reputation and patronage, and much credit was due his name and influence for the large size of the classes.

There were but few men who possessed more of the elements essential to success, as a teacher, than Dr. Locke. With a perfect knowledge of his subject, ample means for illustration, unfailing resources as an experimentalist, he combined animation and fluency of speech, which removed all dullness and obscurity from the mind of the student. Extemporaneous, rather than written lectures are best adapted for the instruction of most intellects. And this would apply with great force to the lectures of Dr. Locke. While *reading* a lecture, his enunciation was guttural and indistinct, and in any other man would have been called affectation. When his attention, however, was no longer directed to the cold, attenuated ideas spread out upon paper, and his mind was permitted to have free

scope, his voice became clear and expressive, more and more as he progressed in the elucidation of his theme. Indeed, when his ideas became, as it were, a part of himself, they were thrown off like rays from an immense luminary, and kindled a fixed glow upon the understanding of his hearers.

Although Dr. Locke expended such an amount of labor and thought on electricity, galvanism, and magnetism, their nature and relations, their advantages to science and uses to man, he was in no degree inattentive to those subjects appertaining more immediately to his chair. Every new suggestion, every new element, every new compound in chemistry, received the test of examination and experiment. If found to be true, and especially valuable, these suggestions, and elements, and compounds, became a part of his lecture. If proven false, or useless, they were without any ado rejected.

An idea has become somewhat prevalent, that men, advancing in years, have adhered so long to old ideas, that they are not qualified to progress with the spirit and discoveries of the age. Lazy men, whether young or gray-headed, are alike in this particular. The first has the advantage of not being over-burdened by the present, and knowing nothing of the past. The latter has the advantage of being able to compare what he knows of the past with what he knows of the present. A man with Dr. Locke's capacious intellect, devotion to science, and untiring habits of investigation, could not be otherwise than perfectly acquainted with every



fact in Chemistry, and if any one has ever attempted to depreciate his qualifications as a teacher, on the ground of deficiency in knowledge, we may conjecture the true motives without any feelings of uncharitableness.

No man, perhaps, had a more accurate acquaintance with Geology in general, and especially the Geology of our country, than Dr. Locke. Most of his studies and explorations were conducted from a desire for knowledge, and the pleasure they afforded ; but, at one period, we find him engaged in behalf of the government, in exploring the mineral lands of the United States, especially “the *physical department*, including the barometrical observations, the measured altitudes, and the geological sections.” At another time he was engaged in making a geological survey of Ohio, under the patronage of the State. During the latter survey he found the largest Trilobite known. The Trilobite species of the extinct fossil family is interesting from the fact, that it “is supposed by Naturalists to be one of the first animated beings of our earth, called into existence by the Great Author of Nature.” As fragments only of the Trilobite were found, doubts were expressed, in both American and European journals, respecting the correctness of the measurements. A Trilobite to measure nineteen and a half inches long, and twelve inches broad, was too monstrous for ready belief. Other portions, in different localities, were subsequently found, by Mr. William Burnet, Mr. Carley, and Mr. George Graham, and that the “*Isotelus megistos*” once had

fossil life, is now considered a verity. It may be mentioned here, that Dr. Locke has also described another new Trilobite, under the name "*Ceraurus crosotus*," as being "one of the smallest, and at the same time one of the most elegant of this family of extinct crustaceans."

A professional friend, who has devoted much time to the study and investigation of Geological subjects, and whose long-continued friendly intercourse with Dr. Locke has enabled him to form a very correct opinion of his character as a Geologist, has given us his views in the following letter :

CINCINNATI, Ohio.

M. B. WRIGHT, M. D.,

*Dear Sir:* — Dr. Locke's taste for Nature early led him to the cultivation of the department of Geology. To the period during which he lived, the first half of the nineteenth century, belongs the merit of having given form and character to this Science; previously to this, it scarce had a place among the Natural Sciences. Many facts had been obtained, many observations made, but the material which had accumulated wanted arrangement, classification; new fields were inviting research, a vast store of knowledge lay hidden beneath the surface, ready to yield up its wealth to the magic influence of an intelligent industry. At such a period in the history of a science, the labors of such a man were of incalculable value; his strong powers of mind, combined with his laborious habits, contributed largely in developing and defining those great principles which are now recognized as connected with the "earlier history of the earth," its primitive condition, the various changes which it has undergone, and the successive races which inhabited it previous to man's appearance. He employed most of the time devoted to this subject, to the investigation of its great principles, and the practical application of them to the useful purposes of life; yet, when opportunity offered, he was not unmindful of the beauties of Palæontology—the "*flora* and *fauna* of the ancient world"—and some of his contributions to this department are not only

remarkable for their originality, but for their accuracy. For the restoration of one of the most remarkable animals which inhabited the earth during its first life-sustaining period, are we to him indebted, and with which his name must ever be associated.

Located, as was Dr. Locke at Cincinnati, upon the *Silurian* formation, the first of the fossiliferous series, a rare and rich field surrounded him, and in its cultivation he displayed an earnestness worthy of all commendation. The strata here he studied carefully, and by an intimate acquaintance with them, he was enabled to identify and classify formations in distant localities, when in after years he was employed in the service of the government.

In 1838 he was engaged in a Geological survey of Ohio, and his report to the Legislature upon the Geological structure of the south-western part of the State, must ever be regarded as a paper of much value—essentially scientific, yet written in a pleasing style, so divested of technicalities, and abounding with so much of practical importance, it will be read by all classes with equal pleasure and profit. It is much to be regretted that provision was not made for the continuance of the survey, from year to year, until the work should have been completed. But although engaged but one season, the labors of Dr. Locke have thrown much light on the Geology of our State, and have greatly facilitated the development of that of the great Mississippi valley.

He was next, in connection with David D. Owen, called to the service of the United States government, for the survey of the mineral lands of the North-west, and while engaged at this work, he had an opportunity of establishing the correctness of a theory which he had advanced after studying faithfully the "Blue Limestone" at Cincinnati: viz., that it was the characteristic strata of the *Silurian* system, continuous, underlying the entire valley. This theory was confirmed when he found this same strata, with its peculiar physical properties and organic remains, cropping out in Iowa in the West, and at Lake Superior in the North.

During his labors in the mineral lands, his familiarity with Electricity and Magnetism, and the accuracy of his Magnetical observations were singularly useful in indicating the depth and

course of veins of ore, and in defining the situation and extent of mineralogical deposits.

I have thus endeavored to merely indicate the character and tendency of Dr. Locke's accomplishments in this department, and to show some of his readings in this section of the great Book of Nature. To do the subject full justice would require much more space than could here be allowed.

In conclusion I may make this remark, that every Geologist who reads Dr. Locke's Geological writings, and sees what he accomplished in so little time, must regret that he could not have spent his whole life in bringing forth the beauties, and elaborating the principles of a science, for which he was so admirably adapted.

Very respectfully,

W. W. DAWSON.

I have recently had the pleasure of reading an exceedingly interesting report, somewhat in the form of a traveler's journal, made by Dr. Locke, of the regions about Lake Superior, and I can not restrain my pen from giving a few extracts. The facts they contain, the eloquent manner in which they are presented, and the deep poetic feeling exhibited may lead many persons to form a more correct knowledge of some of the traits in Dr. Locke's character than any description I can give:

"The Sault St. Mary's is a rapid or fall of the river over a barrier of sandstone, by which the waters in the course of a mile descend from eighteen to twenty-one feet, obstructing entirely the navigation of the stream with the exception of the batteau and birch canoe. The subject of a ship canal around this fall has very justly attracted the attention of our government. With the idea of such a canal in my mind I passed

several times over the ground. The circumstances are the most favorable possible for the accomplishment of such an undertaking. The foundation rock is a soft sandstone, easily excavated, and yet having consistence to withstand the effect of hydraulic pressure and the abrading of the currents. The lower part of the line, along which the canal must be extended, presents loam, sand, gravel, boulders, and other loose materials to an unknown yet undoubtedly moderate depth. Most likely the same sandstone, in place at the head of the rapids, would be found in the bottom of the excavation, forming a very desirable foundation for the whole work from beginning to end.

“The loose materials already named at the surface, have evidently been brought to their present place by the rapids themselves, which occupied the place proposed for the canal, and which then, as now, undoubtedly had the sandstone beneath them. Boulders of granite, gneiss, and sienite are still lodged abundantly on the present inclined plane of the rapid, and serve to tear the descending waters into an agitated foam. As fast as these boulders are undermined and removed by currents, by ice, or otherwise, new ones are brought down by similar causes and take their places. Thus these huge rocks, some of them from four to ten feet in diameter, as well as the waters of the St. Mary are moving by fits down the stream, only at a slower rate. It has not escaped the notice of those who have reported to the Secretary of War on the subject of this canal, that the boulders may be used in the construc-



tion of the canal itself. They are of sufficient size, and some of them of suitable quality, for such a purpose, but a large portion of them will be found difficult to be wrought. But the want of materials for such a work need not be any impediment, as the limestone of Drummond's island would be easily transported to the Sault. The hasty observations which I was enabled to make are consistent with what has already been communicated to the United States Senate, by the War Department, with a single exception. I doubt whether vessels drawing more than six feet of water can at all times navigate the St. Mary's river, on account of the two bars already named; one of rock at the Nebish rapids, and the other of mud in Lake Huron. This, if true, would not require the proposed canal to be so deep as twelve feet, the depth which has been suggested.

"The advantages which would arise from connecting the navigation of Lakes Huron and Superior are at many points self-evident. The commerce of a coast of fourteen hundred miles in extent, although the region may be uncultivated, ought not to be lost for the want of a canal only one mile in length. The development of the unexplored mineral resources of a region which has so far given very favorable indications, would be encouraged and facilitated by the measure, and our means of benefiting the native tribes, both by commerce and by the more efficient exercise of active benevolence, would attach them to our interest, and prevent those depredations which in case of war with any foreign power, they have always been but too

ready to commit. Besides these kinder influences, the consciousness of the facility with which we would be enabled to reach the heart of their country, and keep them from the chief source of their supplies, the fisheries of the lake, would cause the savages to hesitate in any policy which would not meet our approbation.

“There remains another consideration which, although not immediately connected with wealth, is still important as furnishing that without which wealth can not be enjoyed. We venture to urge the opening of Lake Superior to steam navigation, in order to facilitate the access of thousands of invalids to a region so picturesque, so novel, and so invigorating, as can scarcely be equaled on the globe. What is the object of all the wise plans and devices of government, or of individual enterprise, but human happiness, and how can it be better attained than by the dissipation of intellectual suffering and bodily disease? There is a lassitude, a debility, and with it a weariness of life, created by the miasmata of the Mississippi, and by the calm, dry heat of a summer in the South-west, which no ordinary remedial means can arrest, and which too often proceeds gradually, yet steadily, to a disorganization of the solid tissues of the body, and which must necessarily terminate fatally. For such a state of suffering an early escape to the pure water, the clear atmosphere, the temperate summer climate, the rugged fir-clad rocks, the piney glades carpeted with Reindeer moss, and hung with the dangling usnea, and

above all to the holy solemn stillness of the natural solitude of Lake Superior, must all act, as they have heretofore acted, as a rapid restorative.

"The canal being opened the citizen of New York escaping from dust and ennui, and the resident of New Orleans fleeing from the pestilence of the summer months, may be speedily wafted to a meeting at Porter's island, at Isle Royal, or at La Point, and there enjoy most of Borean wonders of which they have read in the voyages and travels of Ross, Franklin and others, and there, in the day, admire the delusive mirage of the distant shores, and, in the night, the portentous streamers of Aurora.

"The loon, or diving bird, very common on Lake Superior, almost always flies against the wind, and the Gibewa Indians have a superstition, that she has power to bring the wind from any point she pleases, or from the quarter to which she flies. Hence, when she meets them in their canoes, they address to her the following prayer: 'Nodin nadin, nodin nadin, nodin nadin,' which means, go bring us wind, go bring us wind, or more literally, wind bring us, wind bring us."

As the voyagers were gliding over the surface of the lake in their canoe, a diving bird flew by, when Dr. Locke composed an impromptu boat song. It was sung to the tune of "Hail to the Chief," and the chorus was constructed of the foregoing and other Indian expressions. By its wildness it suited the scene, and being cheerily sung with their united voices, the

Indians and voyagers were excited to the utmost of their enthusiasm. The sketch continues :

“I took lodgings with the Missionaries, and never did I see the Christian religion appear more lovely than in this sequestered spot, where sectarianism dies a natural death, and the Christians almost, or quite forget to which denomination they belong, further than that they are Christians ; and where, beside the poor Pagan idolatry, or fanatical feats of the Aborigines, Christianity stands strongly contrasted, in simple, unaffected, graceful, benevolent majesty.

“From the slight sketches I was able to obtain from Missionaries and Indians, I came to the conclusion, that their traditionary and religious opinions, which are entirely blended with their ideas of Medicine and Necromancy, had no settled form, but were the machinery by which their artful ones obtained an ascendancy over the more simple and credulous, and that it admitted every latitude of variation which suited that purpose.”

To escape the dangers of a fearful storm, the voyagers landed, and turned their canoe bottom upward, as a shelter. The journal proceeds : “We found ourselves just above the mouth of Garlic river. The shore at this place is a level plateau, shaded by tall Norwegian pines, and carpeted by whortleberries, arbestus, and other lowly plants. In the center of this plain, highly picturesque in itself, but rendered enchanting by overlooking the broad, deep, clear waters of the great lake, is a solitary grave, covered by a monumental

log cabin, with an ample cedar cross overgrown with long *Usnea* moss, waving and sighing mournfully in the breeze. Peeping into this little house of death, I saw the sand had sunk down on the decayed body."

There was to Dr. Locke, "something so touching in the simple, rude monument which pure affection had reared," he was inspired with sentiments of true poetry, which were partially expressed in the following

#### A P O S T R O P H E .

Stranger, another stranger calls to see thy sacred dwelling-place,  
Where, for years, thou'st slept alone in this sequestered spot.  
No unhallowed foot of sauntering idler  
Comes to spend a vacant hour  
In fashionable, fantastic cemetery;  
But a heart-thrilled stranger,  
Persecuted by Superior's relentless waves,  
Is cast by Fate, upon the sand-chafed shore,  
And with holy breast, and tearful eye,  
Leans o'er thy rude built monument,  
And by the ills of life, as by Superior's wave,  
Would fain lie down beside thee,  
To share this envied place.  
Thy comrades laid thee gently in the sand,  
Reared up this cabin-monument,  
And o'er thy lowly head have placed  
This ample cedar cross, on which  
The tangled moss has grown, to mark  
The unlettered time.  
The spring fir tree greens around,  
And spreads its balmy fragrance;  
The lofty pine tree bends its boughs,  
And breathes *Æolian* murmurs;  
The river glides its winy waters;  
The lake sends up its billowy cry,  
And here, amid God's holy temple,  
Which he himself has made,  
The stranger kneels, and breathes a prayer,  
That both our souls may rest in Heaven.  
Sleep on—I leave thee now, but soon  
Must sleep in earth more rudely trod.



Like thine, my breast too must yield  
 To earthly pressure, and the sand,  
 The cold, sharp sand, must fill that chest  
 Where, now so long, the lungs have heaved,  
 And heart has throbbed, and ached,  
 And throbbed and ached again.

The report of Dr. Locke concludes thus :

“The mountains about the lake are not high—one thousand to fifteen hundred feet—but the scenery is picturesque, and interesting beyond description ; and with the cool invigorating climate, must be an attraction for invalids, and for the curious, not surpassed by Niagara itself. To be sure, Niagara is a grand unit, but Lake Superior is a constellation of curiosities, and the cascade of the pictured rocks has double the height of Niagara itself. To the philosopher it will ever be interesting as the region of greatest terrestrial magnetism, the head quarters, the high abode of that invisible, almost spiritual power, which, with heat and light are in the hands of the Almighty, the Soul of the Universe.”

The strong reference to electricity in the closing paragraph of the report would seem to make it proper to introduce here, a more extended notice of Dr. Locke's labors, discoveries and inventions, in the great field of Electricity. In the *American Journal of Sciences*, vol. 33, is a description of an instrument, called *Thermoscopic Galvanometer*, invented by Dr. Locke. Of it he says :

“The object which I proposed in its invention was, to construct a thermoscope, so large that its indications

might be conspicuously seen, on the lecture table, by a numerous assembly, and at the same time so delicate as to show extremely small changes of temperature. How far I have succeeded, will, in some measure, appear, by a very popular, though not the most interesting experiment which may be performed with it. By means of the warmth of the finger, applied to a single pair of bismuth and copper disks, there is transmitted a sufficient quantity of electricity to keep an eleven inch needle, weighing an ounce and a half, in a continued revolution, the connections and reversals being properly made at every half turn."

In January, 1838, Dr. Locke addressed a letter to Prof. Silliman, explaining an apparatus he had constructed to illustrate the principles of magneto-electricity—a subject he was then investigating with great earnestness and labor. The letter has for its caption, "*Magneto-Electricity, and Electro-Magnetic Machines.*" Experiments were made showing the following points:

"1. *The Dip by Electro-magnetism.*

"2. *The Dipping Needle made to move by Terrestrial magnetism.*

"3. *The North end of the earth shown to be virtually a magnetical South pole.*

"4. *The South polarity of the North end of the earth still more strikingly exhibited.*

"5. *Magneto-electricity produced by Terrestrial magnetism.*

"6. *Electricity produced by motion, and motion produced by magnetic electricity.*"

The subject of Terrestrial Magnetism received the attention of Dr. Locke among the earliest of its investigators in this country. A committee of the American Philosophical Society, to whom a communication of Dr. Locke's was referred, say in their report, that "the interest of this paper is much increased by the circumstance, that no accurate experiments on the intensity and dip of the needle have heretofore been made in the United States, west of the Alleghany Mountains."

During the five years Dr. Locke was engaged in his magnetical investigations of terrestrial magnetism, his enthusiasm never abated, and he felt "almost irresistibly compelled to prosecute the subject, but the economy of his domestic affairs rendered it inconsistent with his duty."

In 1837 Dr. Locke made a journey to Europe, as already mentioned, partly to procure the necessary instruments with which to prosecute his investigations in magnetism. The points of interest examined, embrace an area from Massachusetts, east, to the western limits of Iowa; and south, from the center of Kentucky to the northern boundaries of Lake Superior. Many thousand miles were traveled in determining the various questions of interest, from time to time presented. The heavy expenses incurred during this long period of labor and investigation, were defrayed mostly by himself.

Dr. Locke discovered "that the point of greatest magnetic force is at or near Lake Superior. Thus,

there are three important poles, or points, nearly on the same meridian, nearly equally distant from each other, and directly north of the United States, being between the longitudes  $85^{\circ}$  to  $90^{\circ}$ : first, the true North, or Astronomic pole; second, Ross's pole of perpendicular dip, and of magnetical convergence, twenty degrees south of the Astronomic pole; third, the pole of maximum intensity of magnetic force, twenty-one and a half degrees south of Ross's pole, forty-two and a half degrees south of the North pole: viz., in  $47\frac{1}{2}^{\circ}$  of North latitude."

The discovery of the point of greatest magnetic force was deemed by scientific laborers of vast importance, and Dr. Locke received, in Europe as well as in America, a due meed of praise. Before me is a letter to Dr. Locke, from Col. Sabine, dated Woolwich, England, November 20, 1843, from which have been taken the following extracts:

"I hasten to acknowledge the receipt of your very obliging and agreeable letter of the 25th of October, I am very glad to learn that the 'Report on Magnetism,' which I took the liberty of sending you, in 1840, reached you in safety, and I can not but be most highly gratified to hear that it, in any degree, contributed to induce you to undergo the labor and fatigue of making the series of magnetical observations, over the extensive and important district of which you speak. I can not doubt that so valuable a contribution to magnetical science, bearing so immediately on one of the critical points of magnetical theory, will be most warmly wel-

comed by one of your own national institutions, and will be published, as it is so desirable it should be, among the scientific records of the nation.

“Permit me to express the hope that not less for the interest of science, than for your own sake, you will spare no endeavor to obtain a very early publication of your observations. Both what they accomplish and what they leave unaccomplished will be a guide to those engaged in similar undertakings. The Magnetic Survey, which is now in progress, under the direction of Lieutenant Sepoy, in British America, is making a very rapid and successful advance and promises to furnish ample materials for maps for the three magnetic elements north of the United States frontier. It is much to be desired that the survey should be met at the frontier by researches of citizens of the United States, conducted on their own grounds. I learn from your letter that you have yourself achieved already a very considerable part of this undertaking. The field of operation is thus greatly narrowed on the one hand, while on the other a full knowledge of the results which are obtained, may be expected to indicate the direction in which further researches can be most profitably made.

“It will be desirable to have a well assured comparison of the force at Cincinnati and Toronto, Upper Canada. If there should prove a difficulty causing a serious delay in the publication of your discoveries in the United States, I can not doubt that either the Royal



Society or the British Association would be very proud to receive and print them."

The very flattering manner in which Dr. Locke's investigations were received by Colonel Sabine, were highly gratifying to his feelings. His devotions to Science were for its own sake, and his energies were renewed by the encouragement of one of kindred spirit. The generous commendations of Colonel Sabine were no less acceptable, coming from a European savant. Still, like a true patriot, he preferred the approbation of his own countrymen and the appropriation of his labors to the renown of his native land. In a manuscript paper I find some very appropriate comments upon this subject, a part of which I am tempted to transcribe :

"But what means let me now ask has the Western devotee to Science so far had of becoming known, or of putting into circulation, for the common benefit of mankind, the results of his researches. So isolated and so retired has been his lot that some might smile at the very idea of his existence ; and yet such entities are to be found not unfrequently in that great garden included between the Alleghanies and Rocky mountains, a region eminently calculated to elicit that enthusiasm which the Creator has seen fit every where to infuse into the hearts of a few, whom for his wise purposes he has destined for the accomplishment of special duties. Being thus unknown the scientific man of the West has stood no chance, however deserving

he may be, of receiving any share of that small patronage which our government had power to bestow.

“Generally in the United States perhaps there is no class of society whose interests are more neglected than those of the men who devote themselves to the cause of Science. This applies more especially to those who engage in original researches, and who by their occupation are most likely to bring honor and profit to the country. Let me ask the simple question: What must the man do who has the talent and the will to engage in the toil of research, desirous of nothing more than the means of accomplishing his object without any special advantage to himself? Is there any means by which he can procure the needful instruments?—by which he can pay the expense of a journey? When his researches have been made are there any means by which he can publish them for the honor of his country and for the benefit of mankind? I know of none. It is true we have periodicals which will receive some light and unimportant articles, requiring little expenditure to bring them out, but when a paper containing the results of a great deal of labor and requiring expensive engravings is offered it will be rejected—it must be rejected, as the periodical itself has not the means of executing it. What then must the savant of the United States do that his researches may be made and published? He must, in the first place, purchase instruments at his own cost, conduct his own experiments at his own expense, travel if his subject requires it, paying a small tax for corres-

pondence and postage, and finally, to save himself the credit of his labors, must pay all the expenses of publication. In how many cases under these circumstances does it occur that foreign countries are the first to know and publish what of value has been achieved among us, and transfer to their own credit that which should have appeared as the grace, the ornament of our own country, merely because they are willing to publish in a handsome and creditable manner without cost to the author? How is such an evil to be remedied? It is, I conceive, to be achieved by the establishment of the National Institute, an event which marks a new epoch, and commences a new era with learned men and with the nation. It can not fail to receive unqualified popular favor, and to be ultimately fostered by public munificence."

During Dr. Locke's extensive journeyings and examinations, he was induced to examine the "connection between Geology and Magnetism." In a paper upon this subject is this explanation: "It was but natural that I should note the geology of the substratum, at each station; and on reducing my observations, and putting them into tabular form, I examined the properties of each group, extending over rocks of a similar kind, and found, so far as I had examined, some general indications by which classes of rocks might be distinguished, although concealed at considerable depths; the magnetical instrument in this respect answering the general purpose of a mineral, or divining rod."

Prof. Wheatstone, Sir David Brewster, and Prof. Locke, were engaged, about the same time, in interesting and curious experiments "on single and double vision, and on optical illusions." Their experiments and results were somewhat similar, each one, however, being entitled to the credit of originality—the experiments of one being conducted without any knowledge of the other.

Dr. Locke invented an instrument for the purpose of making experiments under the head of what he has called "binocular vision." "This instrument, and the researches into 'binocular vision,' serve to extend, considerably, our knowledge of the anatomy and physiology of vision—nor is the subject by any means exhausted. It will illustrate many important points in optics, and especially the physiological point of single vision by two eyes. It shows, also, we do not see an object in itself, but the mind contemplates an image on the retina, and always associates an object, of such a figure, attitude, distance, and color, as will produce that image by rectilinear pencils of light. If this image on the retina can be produced without the object, as in the phantascope, then there is a perfect optical illusion, and an object is seen where it is not. Nay, more, the mind does not contemplate a mere luminous image, but that image produces an unknown physiological impression on the brain. It follows that, if the nerves can by disease, or by the force of imagination, take on this action, a palpable impression is made without either object or picture. As this would

be most likely to occur when actual objects are excluded, as in the night, we have an explanation of the scenery of dreams, and the occasional 'apparitions' to waking dreams. The murderer too, has a picture stamped on the sensorium, by the sight of his victim, which ever wakes into vibrations when actual pictures are excluded by darkness."

#### MICROSCOPIC COMPASS.

In vol. xxiii. of the American Journal of Sciences, is a description of a Microscopic Compass, invented by Dr. Locke. His own language will best convey the general objects of the instrument. He says, "I do not propose this as a substitute for the surveyor's compass; but merely as an instrument exactly suited to amateurs, and scientific travelers, to whom it is inconvenient or unpleasant to carry a back-load of machinery to take the bearing of an object. I have, for several years, been carrying on a trigonometrical survey of the beautiful valley of Cincinnati, in which I reside. This I have done for the recreation, both physical and intellectual, which it affords. It invites me to exercise in the open air, and is the best anti-dyspeptic I have tried. I have managed the several points of the valley very much to my satisfaction with the sextant; but nothing answers so well for 'meandering' the ravines, rivulets, and ridges of the hills, as the Microscopic Compass. I take the angles with equal accuracy with the surveyors, and with ten times the convenience."



A practical engineer speaks thus of the instrument: "Several engineers, to whom I have shown Dr. Locke's hand-level, all concur with me in the opinion, that it is an invaluable instrument for the civil engineer. No one, acquainted with its merits, would be without it; and I have heard many express their disappointment at not knowing where to procure them ready made."

This pocket instrument was patented to Dr. Locke in 1850, and is kept on sale by Mr. James Foster, Philosophical Instrument maker, in this city. This invention was patented, not with any hope of pecuniary reward, but, simply, that he might secure to himself the claim to which he was entitled—the credit of having rendered some service to science, and lessened the wants of his fellow-laborers. It was a trait in Dr. Locke's character to be scrupulously exact. He was always ready to award to every man just merit, and always willing to labor for public benefit; but he was not willing, that his original thoughts and inventions should be claimed as the exclusive property of those who had no brains to think for themselves. He did not wish to deprive any one of the pleasure of seeing and feeling, and even using these jewels in his crown; but those jewels were his, obtained at great cost, and no other mortal had any legitimate claim to that crown. In a few instances then, he appealed to the government to sanction his claims through the medium of a patent.

The examples which have been presented to us, of Dr. Locke's genius, or his great powers of origination,

seem to have arisen from a happy combination of mechanical skill and scientific knowledge; so that he could individually adapt the means to the end. Some of our mechanics, possessing great skill in the construction of delicate machinery in conformity with models and instructions, are destitute of all knowledge of the principles involved in the adaptation of that machinery. This to Dr. Locke has been a source of great perplexity, and to the mechanic of regret and mortification. The doctor improved an Astronomical clock, by adapting detents to hold the movements, while the pendulum, which is the time keeper, swings independent of every thing, except the point of suspension. I called upon a clock-maker, who made the mechanical part of the improvement, for an explanation of the new principles introduced into the clock. He replied that he had worked entirely under the instructions of Dr. Locke, and had not a sufficient amount of scientific knowledge to appreciate the principles associated with the above improvement, and consequently could not give me the information desired.

Another illustration may be given, not only of the enthusiasm with which Dr. Locke pursued his investigations, but the effect of his mechanical ingenuity and scientific knowledge combined.

Soon after he had commenced his investigations in electricity, and its associate subjects, depending for results mainly upon his own tact and resources, he was informed by Mr. Wells, of this city, that he had seen

a magnet, of great superiority, made by a rude, unlettered blacksmith. The latter offered to communicate to Dr. Locke the method by which he imparted to magnets such immense power for the sum of twenty-five dollars. An agreement was entered into between them, but the blacksmith was dilatory, and neglectful of his appointments. At length a scientific London journal was received by Mr. Wells, describing the manner in which the force of the magnet was increased by electricity. This journal was carried by Mr. Wells straightway to Dr. Locke, who became almost wild with excitement, and together they wrought out, and experimented with a magnet, hour after hour, during the night, and until day dawned. This led, step after step, to inventions and discoveries, until he brought forth the improved Galvanometer, the results of which have already been mentioned. This Galvanometer he took with him to Europe, and exhibited it to those engaged in the production and examination of electrical phenomena, and after an interchange of sentiments the enthusiasts united in their labors. And here the ability of Dr. Locke shone forth conspicuously, and to great advantage. His knowledge of mechanics enabled him to use instruments with astonishing results, which were comparatively useless, even in the hands of those by whom, and for whom they were constructed.

If Dr. Locke could express his wishes respecting the future greatness of Cincinnati, one prominent wish would be, that all her young artizans should avail

themselves of the incalculable advantages now before them, for acquiring scientific knowledge. Then, like himself, they could not only work to order, but could order work; or could, if need be, at the same time plan and execute.

Other inventions must be passed by, for a brief consideration of his great achievement—his crowning glory—the “*Electro Chronograph*,” or “*Magnetic Clock*.” Some of the facts connected with this invention may be given in Dr. Locke’s own language. He says, “My attention was first drawn practically to the subject of the combination of clock and electrical machinery, for procuring useful results, in 1844, ’5. I was delivering a course of popular lectures in Cincinnati on Electrology. My object was, not so much to reduce any thing to a complete system in actual practice, as to show the essential elements of what was actually practicable. Having commenced and continued my studies of Electrology, under what was called ‘disadvantageous circumstances,’ viz., without the usual aid of instruments, or instrument makers, I was under the necessity of devising and making my own apparatus. Under these circumstances, I had accumulated in the shop-room, contiguous to my laboratory, a very efficient and perfect set of tools, among which are the lathe and other shop-tools made by the distinguished sculptor, Hiram Powers, and used by him while he occupied himself as a mechanic in Cincinnati. Whenever a new principle was announced, I found it better to devise and make the apparatus suited to its illustration, than to

purchase the stereotyped models, imperfectly planned, and worse manufactured. Thus avoiding all servile copying, and venturing almost to avoid the trodden path pointed out by books, we drank as much as possible from the fountain itself, by appealing directly to nature. This course gave a freshness to popular instruction which evidently excited an interest, and produced an effect proportionate to the intense toil which the prosecution demanded."

The following is the language of the late Sears C. Walker, who ranked among the first scientific men of our country. "Dr. John Locke, of Cincinnati, has invented a very cheap and simple instrument, which can be attached to the same pivot with the second hand of any clock, and which will, when put in connection with the telegraphic circuit, make the clocks beat at the same instant, all along the line. The hours, seconds, and minutes may be registered on a fillet of paper, and by striking on the telegraphic key, at the instant of any occurrence, the date of it is recorded on the same paper, to the hundredth of a second. This invention will be useful for many practical purposes. It makes the current of time visible to the eye in a permanent record. It does not change the rate of going of the most delicate clock. It will doubtless be applied, hereafter, to many purposes for the advancement of science—such as the determination of geographical longitude, in connection with transit instruments; the measurement of the velocity of sound; perhaps, if the circuit be long enough, of the lightning



itself. The most expert clock-makers and mechanicians, and the most expert telegraph operators, and inventors, including Dr. Morse himself, had been consulted. None had succeeded in a mode that was absolutely satisfactory. It required the union of all the arts of electro-magnetism, of clock-making, and of telegraph registering, in the same person, in order to insure success. Dr. Locke had all the requisites. He made the invention. His son made the model. It was attached to a clock made by himself. It was tried on a register of his own invention and handicraft. He is, therefore, in every sense, the inventor of the attachment. The utility of the invention to the coast survey is so great, that one night's work with the new apparatus, and such accompaniment as will necessarily be provided, may, perhaps, be worth as much, in practical results, as a whole campaign would be without it."

Lieut. Maury's letter, announcing officially Dr. Locke's invention to the Hon. John Y. Mason, Secretary of the Navy, from the National Intelligencer, of June 8th, 1849, and dated, National Observatory, Washington, January 5th, 1849, reads thus :

"I have the honor of making known to you a most important discovery for astronomy, which has been made by Dr. Locke, of Ohio, and asking authority from you to avail myself of it, for the use and purposes of this Observatory. The discovery consists in the invention of a magnetic clock, by means of which seconds of time may be divided into hundredths, with as much accuracy and precision as the machinist, with

rule and compass, can subdivide an inch of space. Nor do its powers end here. They are such, that the astronomer in New Orleans, St. Louis, Boston, and any other place to which the magnetic telegraph reaches, may make his observations, and at the same moment cause this clock, here at Washington, to record the instant with wonderful precision. Thus, the astronomer in Boston, observes the transit of a star, as it flits through the field of his instrument, and crosses the meridian of that place. Instead of looking at a clock before him, and noting the time in the usual way, he touches a key, and the clock here subdivides his seconds to the minutest fraction, and records the time with unerring accuracy. The astronomer in Washington waits for the same star to cross his meridian, and as it does, Dr. Locke's magnetic clock is again touched; it divides the seconds, and records the time for him with equal precision. The difference between these two times, is the longitude of Boston from the meridian of Washington. The astronomer in New Orleans, and Saint Louis, and every other place within the reach of the magnetic wires, may wait for the same star, and as it comes to their meridian, they have but to touch the key, and straightway this central magnetic clock tells their longitude. And thus this problem, which has vexed astronomers and navigators, and perplexed the world for ages, is reduced at once, by American ingenuity, to a form and method the most simple and accurate. While the process is so much simplified, the results

are greatly refined. In one night the longitude may now be determined with far more accuracy, by means of a magnetic telegraph and clock, than it can by years of observation according to any other method that has ever been tried. It is therefore well entitled to be called a most important discovery. It is a national triumph, and it belongs to that class of achievements by which the most beautiful and enduring monuments are erected to national honor and greatness."

After the observations of Dr. Locke in magnetism had been published, the English government forwarded and presented to him, a full set of magnetical instruments, as an evidence of their high appreciation of his labors.

The great amount of knowledge acquired by Dr. Locke, and his marvelous success at invention, were attributable, not only to the strength, and activity, and expansion of his intellect, but from a belief that he could accomplish whatever he undertook, from his tireless industry, and from his almost exclusive devotion to a subject, until thoroughly understood. While in Europe he purchased a transit instrument, and not long after his return, placed it in a small observatory, erected by himself, east of the Medical College of Ohio. Night after night his astronomical observations, and day after day his calculations were made, until his series had been completed, and some great object attained. He was not sustained by patronage, nor encouraged by applause. In the still hours of the

night we have often found him, with nothing to disturb the monotony of silence, save the tick of his chronometer, and his own voice, repeating one, two—one, two—one, two. While gazing through space, and watching the movement of some heavenly body, his face became as radiant with devotion as that of a saint before an object of worship. His astronomical knowledge having been made as perfect as the claims of science generally, upon his time, would justify, he turned to other subjects with equal ardor and energy. Not a space was left, not a link was broken out of his long, and varied, and invaluable chain of action.

Following this, perhaps, his thoughts became concentrated upon some important invention. Once engaged he allowed nothing to interrupt him until the work was modeled, at least in his own mind, or completed. He had devised a galvanic battery, upon a new principle, and during the period he was engaged in constructing it and experimenting with it, he was almost constantly in his laboratory. I visited him at different hours in the night and found him at work. Several days and nights were required to finish the apparatus and to bring it into good working order, and nothing but the highest state of mental and nervous excitement could have sustained his physical energies for so long a time and with so little sleep. Prostration followed, but as soon as possible he was engaged in unraveling some mystery, improving some machinery, or elucidating some useful and interesting subject.

In the application of principles Dr. Locke's mind

was amazingly suggestive, and he was never satisfied with his own inventions until they had been submitted to every possible test, and by comparison deemed perfect.

This concentration of thought was with Dr. Locke a habit; and often subjected him to the charge of absent-mindedness. Traveling by public conveyances, and surrounded by strangers, he generally found it most agreeable and profitable to commune with his own thoughts. He invented the microscopic compass while riding in a stage coach.

A man of genius whose mind is embracing admirably and lovingly some of its own creations, or who is aspiring to perfect something still more new and beautiful, may be unmindful of things around him, until indifference becomes a habit. I have sat at my own table with Dr. Locke when it seemed that he eat more from the demands of his system than from choice in taste, and this peculiarity was so fixed that he never asked for any article of food at his own table although he seldom refused any dish handed to him.

It was but seldom that Dr. Locke was seen carrying an umbrella even as a protection from the rain. In his botanical and geological excursions and in his out-door labors generally he found it more an encumbrance than a protection. Thus the umbrella with him fell into disuse. His appearance, therefore, in the rain without any other protection than an old cloak thrown over one shoulder, was rather from the force of habit than from absent-mindedness.



When Dr. Locke became intently engaged in the investigation of some abstruse subject, he was unmindful of the hour or day, while a single question remained unsettled. After his mind had been placed upon the track of thought it seemed to advance with such velocity and power that although it could be guided it could not be suddenly stopped. Still, the fixed laws of nature being violated, the penalty is almost sure to come.

“Six days shalt thou labor and do all thy work,” is one of the commands of the Almighty. Within that period he had created the heavens and the earth, and was not only willing to dignify his creatures by stamping his own likeness upon them, but by bestowing upon them power, in weak imitation of himself, to accomplish, within a given period and for the time being, all their temporal purposes. The seventh day opened upon a newly created world, the sun reflecting grandeur and glory, the moon and stars moving in their appropriate orbits through space. It was a hallowed day—the soul of the great Architect was taking repose, and silence pervaded the universe.

There is a voice speaking through nature which appeals to the intelligence and feelings of every man. And the power of faith controls him, as it were, in spite of himself. He sees more beauty in the landscape, impressed by the serenity of the Sabbath, than on any of the busy, bustling days of the week. The summer forest seems to be robed in a deeper green,

and the mellow leaves of autumn have brighter and more various hues. The wild flowers, skirting the woodland, open their petals wider and exhale a sweeter fragrance, while the willow by the brook bends his head in more profound homage. The crack of the hunter's rifle sounds louder through the forest, and rolls a more prolonged echo along the hillsides. The noise of the hammer has an unwelcome sound even to the workman himself.

The command to labor six days and to rest on the seventh was not only designed to test the faith and to inculcate a moral obligation upon man, but to enforce the practical truth, that he should appropriate one-seventh of his time to mental and physical repose. Man is in a certain sense and to a limited degree self-regenerating, yet there is a limit to his powers of endurance. The inroads upon Dr. Locke's strong physical organization forcibly illustrate this truth.

Dr. Locke was not a man of the world, as the expression is commonly received, hence he was not a man for the world. In his feelings, as well as in his habits, he was modest and retiring; yet when he did mingle socially with his friends, he was animated and joyous, his conversation abounded in wit, sweetly flowing truths, and beautiful imagery.

He did not carry his taper that he might be seen, here and there of men; but in the solitude of his laboratory he kindled the fires of his genius, and sent out rays as from a grand mirror, that the whole world might

be illuminated. He did not mount the rostrum and harangue the multitude, as a leader in some fierce contest; but he summoned the spirits of nature from the mountain, and forest, and prairie; from the caverns and mines of the earth; from the streamlet on to the mighty ocean; from the firmament, and from the spheres far beyond unaided vision. While thousands upon thousands were playing with a bauble, a useless toy, he was chaining light, heat, and electricity, "the soul of the Universe," to the chariot of science, and propelling her onward, full freighted, for the good of mankind.

If a mind, that can fathom, and comprehend, deep, and abstruse things; if genius, that can originate, and skill, that can execute; if will to labor, and patience to endure, constitute greatness, Dr. Locke was, truly, a great man. He had the inspiration and language of a true poet; he understood music as a science; he could sketch the landscape with the accuracy of a practiced artist; he was a mechanic, a mathematician, an astronomer, a chemist, a philosopher, a logician, a physician. He had studied all things upon the surface of the earth, had penetrated into its hidden depths, and had formed an intimate, every day acquaintance with the beauty and glory that surround it.

The following letter, written by one who, it will be seen, was long acquainted with Dr. Locke, and whose zeal has been equalled only by his refined taste in

the investigation of natural science, we are induced to present entire.

CINCINNATI, Ohio, 1857.

DOCTOR M. B. WRIGHT,

My *Dear Sir*:—You have asked me to state what I know of our lamented friend, Dr. John Locke.

It is thirty-four years since I made his acquaintance, and during the greater part of that time our relations, as brother naturalists, were of the most intimate character—our sympathies and tastes being congenial. Many a pleasant ramble have I enjoyed in his company, in search of Botanical or Geological specimens, for these were his two favorite branches in natural science. It was amusing to witness his earnest enthusiasm, when holding up some new specimen which he had found, and exclaiming “treasures! treasures!” to the inquiry, “What have you got there, Doctor?”

On one of his Botanical rambles, among the hills back of Covington, with his tin case under his arm, he was watched, followed, and came very near being arrested for a counterfeiter, by some of the police, who had kept an eye on his walks to the hills and ravines for months before—the tin box looking very suspicious. And it was only after a thorough examination of its contents that they dismissed him for a “fool yarb Doctor.” He always took a friend with him, after that, for fear of accidents and mistakes.

The Doctor had a slow and deliberate walk—it might be termed a *mathematical* walk. This greatly annoyed a sprightly, nervous little girl, of some four or five years of age, whom he passed at her door on Fourth street, every day as he went to the Post-Office. It was in strong contrast to the hurried and rapid walk of most of those who thronged that busy thoroughfare. At last the child could stand it no longer, and one day came out on the pavement, stamping her little foot, and calling out to him, “Man, why don’t you walk faster? Walk faster! Hurry, man! Every body walks faster than you!” The Doctor used to tell the story with great relish.

It would make this letter too long to state all I know illustrative of the character of this remarkable self-taught, self-made

man. But his acts, while living, will keep his name in bright remembrance long after his death, for they were all of a practical and useful kind. As a teacher he was successful and beloved by his pupils, both in his Female Academy and in the Medical College of Ohio. As a Naturalist he was accurate and discriminating, and his judgment in matters of science was much respected by his associates.

Of his character as a Medical laborer in the College of Ohio, especially in Chemistry, you, having been his associate professor, are better able to judge than I am.

His knowledge of the Mechanic arts was wonderful, taking into view his various other studies. But he appeared to have a natural taste for them. He once told me, that for years he had made it a duty to learn as much as he possibly could of some one trade every year. His workshop was a perfect museum of materials, tools, and specimens of his handicraft in the several trades he had studied. These hobbies sometimes cost him more than he could well afford.

He was connected, for a time, with the Coast Survey, but left it as it took him away from his family too long.

The Directors of the Cemetery of Spring Grove engaged him to lay down a true Meridian, or base line, from which an accurate survey of all the lots was to be made, on a system of triangulation. This work he accomplished in the most satisfactory manner.

Upright and honorable in all his dealings, simple in habits, and economical in his expenditures, he lived strictly within his limited income at first, until his earnings in after years enabled him to leave, at his death, a handsome property to his family.

Very respectfully,

R. BUCHANAN.

It is not unusual for a portion of the public, at least, to consider those who are earnestly and successfully engaged in the cultivation of Science, as destitute of those affections which come naturally and purely from the heart. They would have love always dancing, and on tip-toc—always softening the eye, and furnishing



the tongue with melodious accents—always in a state of effervescence—always with *rouge* upon the cheeks, and highly perfumed. The deep, quiet, clear, unsophisticated fountain of affection brings from them no tokens of approval.

Is the mind and the heart placed in such opposite extremes, that when one is admiring the beautiful creations of Spring-time and Summer, the other must endure the long night and icy chains of the Arctic circle? When the mind goes down into deep caverns, roams over broad oceans and in foreign lands; when it penetrates the heavens, and is amazed at the number and magnitude of other worlds—must that tie, which bound the heart to its early love, become broken? When the mind becomes dazzled by the brilliancy of those scientific lights which genius may have kindled, must the heart be insensible to the warmth of that flame which is ever bright and beautiful on the altar of kindness and love? It was not so ordered by God, and constitutes no part of the true nature of man.

Dr. Locke's seeming disregard of surrounding objects, and his intensity of thought when engaged in the investigation of some pleasing or important subject, may have given to the exterior man a degree of formality and coldness. But the deep feeling manifested on proper occasions, gave full assurance that the inner man retained its sensibilities and hallowed associations. A very few years before he died, Dr. Locke visited his New England kindred, and in an ode of eleven stanzas, written on that occasion, he has given us the

sweet flowings of his sensitive nature. A portion of it may be here repeated.

1. We came from distant lands  
To join our friendly hands,  
With those we love;  
And here, mid friendship's flow,  
We've all been blest below,  
With joys which angels know  
In realms above.

\* \* \* \* \*

3. Here, where the rocks and hills,  
The groves, and leaping rills,  
In beauty shine;  
And lofty mountains rise  
Up tow'rd their kindred skies,  
With which their grandeur vies,  
In looks sublime!

\* \* \* \* \*

8. And now, again we part,  
While ev'ry throbbing heart  
Beats high and warm;  
And though the leaf be sere,  
Be this, our meeting here,  
To mem'ry ever dear,  
Not time shall harm.

There is always a degree of curiosity in the public mind, to know something of the religious sentiment of distinguished scientific men. Aside from a willingness to gratify this curiosity, there are other and more weighty reasons for announcing on the present occasion the sentiments of Dr. Locke on this all-important subject. His own thoughts can be best expressed in his own language. A few short paragraphs, therefore, will be transcribed from a lecture on Natural Theology, delivered by Dr. Locke, in the Medical College of Ohio. It comes to us, increased in value from the

fact that it is among the last, if not the very last published record from his own pen. He says:

“The term ‘Natural Theology’ means the study of the existence and attributes of God, as evinced in his visible works in the created Universe. I do not propose this study as a substitute for revelation, but as an auxiliary; and, although it does not teach the doctrines of redemption by a Saviour, yet it does teach the attributes in which salvation has its foundation—*mercy and power*. To the greater part of mankind, religious faith obtains a place by education, feeling, and habitual exercise. To them religion is an emotion, never questioned by any attempt at rational objections. But to those whose professions, pursuits, or tastes lead them to a study of nature, the conclusions of Natural Theology are especially important. It is a great work, too, when we have established in the mind of a young person, a full and impressive belief in the existence of Deity, and that too, by an authority which can not be questioned—the authority of the ‘Elder Scripture,’ written by God’s own hand; that autograph of the Almighty, which has not been copied; the unspotted mirror which reflects the image of the Almighty.”

“We can not comprehend a blade of grass, a drop of water, or a grain of sand, how much may we profess to know with respect to any of the attributes of the Creator, and how dare we undertake to judge and condemn a brother upon that supposed knowledge. And let us not in our pride felicitate ourselves upon our

mercy to a brother thus condemned by us, that we do not take his life while we cut him off from our kindness, and blast and destroy his reputation by calumny. By some means or other this state of strife, disputation, uncharitableness, and persecution is to disappear, and the happy time is to come when all shall see alike, when backbitings shall cease, and the tongue of the slanderer shall be forever still. The study of God's works, so magnificent, so infinite indeed, and therefore so humiliating to the beholder, is to contribute to this millennial result."

"The Scriptures have an ultimate, and our object ought always to be to discover that ultimate truth, by all the lights which our Creator has given us. As the study of nature, in a right spirit, is one means of arriving at such truth, that study recommends itself by no ordinary consideration. We are commended to 'consider the lilies of the field, how they grow; they toil not, neither do they spin, yet Solomon, in all his glory, was not arrayed like one of these.' And is any one an infidel because he studies the things that are made? and especially when he studies those things with a sincere desire of learning, by that study, the invisible things of Him that made them—even his eternal power and Godhead! The things that are made! What a study! What a source of pure, holy, heavenly happiness to those who will study those things attentively, and industriously! It were a fault to present the heavenly principles of moral feelings, and moral duties in a garb so somber, so cold, so

forbidding, as to repel and chill the natural vivacity of youth. But, when we turn our attention to the things that are made, how inviting! how persuasive! how eloquent! The flowers of the garden, the lilies of the field, the violets and anemonies of the woods spread their charms, not so much to invite the bee to their nectaries, as to attract the intelligence of unsophisticated youth to the study of the excellencies of the Creator; every flower acquiring a tongue, and speaking in music, as sweet as their odors, the lessons of wisdom."

"While we have these vast demonstrations, resting as it were on our very senses, who is there that does not feel a delightful awe? Who is there that does not spontaneously, and before he is aware of it, find himself prostrated in intellectual humility, before his Maker, in the essential act of adoration and worship. These emotions may be transient, may be stifled, but still they must have darted, at happy moments, through the hearts of almost every one of us."

In early life Dr. Locke was partial to the doctrines and modes of worship of the Quakers. He never attached himself formally, however, to any church; nor do I know that he ever determined on doing so, until about the period of his last illness, when he had decided upon joining the Episcopal Church. He had been impressed with a belief that he had a mission to perform for himself and others; and that was, to exhibit the power and goodness of God, through his works, in aid of revelation. We have seen how faith-



fully and ably he performed his allotted duty. But when he found that his energies were failing, and that his mission could no longer be efficiently continued, he decided upon resigning all into the hands of his Maker, knowing that his own delinquencies would be canceled by the spotless perfections of One, to whom his soul could render unceasing glory.

Would to God he had lived and enjoyed health, long enough to have united himself with the church, and to have given to the world practical evidence of pure joy, associated with true, active piety. He had been a worshiper of every thing bearing the impress of an almighty hand, and should he have concentrated all his thoughts and feelings upon God, and his mediatorial sacrifices alone, how ecstatic and uncontrollable would have been his enjoyment. We have tried to appreciate the character of his mind, the goodness of his heart, and the value of his labors; we have had confidence in his integrity; we have sympathized with him in difficulty; and we should have rejoiced to have heard him depict his foretaste of heaven.

Already have I trespassed upon your time and patience: but still you will not be satisfied, unless I describe, briefly, the causes and nature of his illness.

The time he was inventing and constructing his magnetic clock may be considered his palmy days, although he had had, previous to that time, following severe and long continued mental labor, attacks of high irritation, or slight inflammation of the brain.

During the winter of 1849—'50, while the internal

affairs of the Medical College of Ohio were being conducted quietly, harmoniously, and successfully, she was dragged into the arena of political warfare. The elements of attack became more deadly, and the assailants more numerous, in proportion to the nearness of triumph. Dr. Locke was removed from his professorship, and notwithstanding he was subsequently re-elected, the circumstances attending his removal preyed upon his spirits, weakened his energies, clouded his hopes, and he was never himself again.

In the sadness of his heart, and amid the gloom surrounding him, he wrote a letter declining an acceptance of the chair from which he had but recently been removed; but your speaker urged a re-consideration of his decision, and finally induced him to re-enter the school. Beyond this nothing was seen calculated to prevent his utter prostration.

He yielded to the persuasions of those whose best judgments and good wishes he had secured, but he remained unhappy. He has visited us at a late hour in the evening, and remained until he had unburdened himself of his deep grief, which was, frequently, not until after the hours of another day had been counted. He spoke of the college as of a froward child, to whose interests he had devoted all his faculties, and to whom he had given, without stint, his time, his means, and his kindest wishes; and there was a contagion in those bitter tears as they were seen coursing down his furrowed cheeks.

He resigned his professorship after about two years

additional service, and removed to Lebanon, the academy in that place having been placed under his management. He had been induced to think that he might elevate the character of the school, by the introduction of some new branches of education, especially those adapted to the interests of the agriculturist. It seemed necessary, also, for the restoration of his sinking powers, that he should secure a degree of quietude, freedom from the excitements of a medical professorship, and a withdrawal from those scenes to which he could not recur without painful and depressing emotions. At different periods, during his residence at Lebanon, he visited our city. At one of these periods he was again seized with a paroxysm of fever, associated with a high degree of cerebral and nervous excitement. After having been restored partially to health, he returned home; but the pure country atmosphere did not exert upon him its wonted invigorating influence.

In October, 1855, having resided in Lebanon about eighteen months, he returned with his family to the city. His increased failure of mind and body was apparent. He was pale and thin, his step was tremulous, exhaustion followed moderate exercise, and he became subject to severe and alarming paroxysms of asthmatic breathing, the action of the heart being greatly interrupted, and the whole subsiding in a degree of stupor.

From the time his health became permanently and perceptibly impaired, he would frequently fall asleep,

for a moment, while engaged in conversation, without seeming consciousness of it on awaking.

Being deeply interested in his welfare, his medical adviser urged him to withdraw from care and labor, and seek advantage from traveling, and from sojourning for a time on the Atlantic coast. On former occasions he had derived benefit from Geological excursions, and, instead of following the above advice, decided upon going to Virginia, to complete an examination and survey of some coal lands, he had undertaken some time previously. The weather was unfavorable; the streams were high, the earth was wet and muddy, good lodgings could not always be procured, food was mostly unsuitable, and hunger was often the only friend near. Under these discouraging circumstances it is not surprising, that after an absence of five weeks, making his examinations on foot, Dr. Locke should have returned with indisposition greatly increased.

At first, after his return, his condition seemed to be that of exhaustion, following excessive mental and physical effort, although the volume and strength of pulse might have led to other inquiries. His general appearance was that of anemia, associated with paucity of blood. For a week, perhaps, after his return, he made occasional calculations from his field notes, wrote a few pages, examined some specimens he had recently collected in natural history, and recorded, for his own satisfaction, and for future use, the prescriptions of his medical attendants.

A very distressing condition now became a leading one—an inability to keep awake longer than a few minutes at a time, whether engaged in conversation, or in taking food. During the sleeping periods, breathing was labored and irregular, or wholly suspended. He was roused by a sense of suffocation, as in extreme asthmatic conditions, or dropsy of the chest. The liver was greatly enlarged, and prominent even to the eye, and continued so, more or less, until within a few days before his death. His inferior extremities became very much distended by dropsy, but returned to nearly their natural size toward the close of life. The remembrance of names became gradually obliterated, faces were not recognized, vision grew dim, paralysis disabled the upper and lower extremities of the right side, unconsciousness supervened and continued four or five days, when, July 10, 1856, and at the age of 64, death terminated his sufferings.

An examination was subsequently made. His brain was much above the average in size, weight, and depth of its convolutions. A portion of the left hemisphere was softened, and without decided evidences of active inflammation; water was found in both cavities of the chest; but, from the fact that the respiratory murmur was distinctly and loudly heard, from the base to the apex of his immense lungs, and that not a spot of dullness was indicated by percussion, it was inferred that the deposit took place a short time before death. The fullness and strength of pulse, which



continued during the almost entire progress of the case, was accounted for by this examination. The heart, and its blood-vessels were free from disease, but larger, much larger, naturally, than any ever before observed by those engaged in the examination. One, whose opportunities for observation has been extensive, exclaimed, "His aorta is as large as that of an ox."

Laying aside technical expressions, and technical interpretations, it may be said, that there had been such a breaking up, as it were, of the great nervous centers, such a weakening of the very essence of vitality, the great machine could no longer be kept in motion. And thus, day after day, was it our melancholy privilege to behold a widely expanded intellect, gradually fading away from earth, to enter a brighter eternity.

In the death of Dr. Locke the world has lost a philosopher, science a tireless and original thinker, the medical profession a cautious and wise observer, and the Queen City a bright jewel from her diadem. May his virtues and worth be cherished in our hearts forever.

# THE VOLUME

THE VOLUME OF THE VOLUME

THE VOLUME OF THE VOLUME

THE VOLUME OF THE VOLUME





